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Critical Review of the Complex Interactions between Trust and Credibility Associated with Conservation Science

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ABSTRACT: The credibility enjoyed by natural science and scientists during most of the 20th Century has been challenged in the 21st Century. Philosophers of science have noted waning trust in science as an appropriate foundation for socio-political decisions (Haack, 2012). We propose a preliminary critical review of professional conservation literature that defines trust, explains its emergence, and acknowledges benefits and risks associated with trust. Second, we explore how trust and credibility interact to enhance or detract from scientific legitimacy.

KEYWORDS: communication, conservation science, content analysis, credibility, trust

1. INTRODUCTION

The credibility enjoyed by natural science and scientists during most of the 20th Century has been openly challenged in the 21st Century. Philosophers of science have noted waning trust in science as an appropriate foundation for socio-political decisions (Haack, 2012). This challenge comes from both ends of the political spectrum, and has been demonstrated across a wide variety of public venues, as well as private industry (Cox, 2016). Given this situation, scientists and engineers increasingly seek guidance to better understand the role of trust in enhancing the credibility of their study of the natural world. We argue that this effort is best guided by first defining trust, credibility, and the relationships between these multi-item constructs. Further, exploring how both trust and credibility vary depending on the situation (including, but not limited to the communicator, context, audiences, and mode of delivery) is vital to understanding science-related controversies. And, finally, such an understanding may provide the basis for clarifying the contemporary challenges to scientific legitimacy, and for suggesting democratic means of negotiating them.

Although the waning trust in science and technology ranges from biology to physics, and includes debates as disparate as the nature of existence and the most appropriate structure for ensuring safe rail transportation, we propose to focus on trust and credibility in conservation science. Toward this end, we propose a critical review of the professional conservation literature that discusses the relationship between trust and credibility. Building on Horton, Peterson, Banerjee, & Peterson's (2016) content analysis of credibility as a sought-

after condition for conservation science, we will examine how the professional literature defines trust and explains its emergence, and acknowledges benefits and risks associated with trust.

In this paper, we share preliminary results of a critical review of the literature's discussion of interactions between trust and credibility. First, we describe our methods. We then explain our results followed by discussion. Finally, we conclude with comments on future steps to expand upon the findings in this paper.

2. METHODS

A grounded theory approach (Corbin & Strauss, 2008) guided our content analysis of professional literature. This process lets a theoretical framework develop from the data (Peterson, Peterson, Birckhead, Leong, & Peterson, 2010). First, we searched the ISI Web of Knowledge for refereed journal articles that discussed the role of trust in enhancing the credibility of the conservation biology field. We used key terms of credible, credibility, scientific credibility, trust, distrust, conservation and conservation science. We found 25 articles and read each one to remove those irrelevant to the discussion of trust and credibility interactions with scientific legitimacy. This process yielded 9 articles.

We examined abstracts of each publication. The introductory or concluding paragraph was used if the publication did not have an abstract. Building on Horton et al. (2016), we used 2 categories (credibility and risk) and 7 subcategories (*credibility—expertise, goodwill, trustworthiness,* and *risk—biodiversity, scientific credibility, sustainability, trust*). We defined *credibility—expertise* as conservation scientists' specialized knowledge, *credibility—goodwill* as conservation biologists' care for natural resources and society, and *credibility—trustworthiness* as conservation biologists' integrity. We defined *risk—biodiversity* as all aspects of the living world, *risk—scientific credibility* as conservation biologists' believability and standing, *risk—sustainability* as ecosystems and their functions, and *risk—trust* as choosing to be vulnerable.

We used NVivo 10.0 qualitative software (QSR International, Doncaster, Victoria, Australia) to code individual sentences. The same sentence was coded in multiple categories if it fit more than one. We conducted a word search to discover how frequent the terms, trust and credibility, were used in the professional literature. Finally, we identified the different ways conservation scientists discussed trust and credibility in relation to scientific legitimacy.

3. RESULTS

3.1 Credibility and Trust

When authors discussed the role of credibility and trust in enhancing or detracting from scientific legitimacy, credibility was referenced more frequently than trust. Of the three credibility subcategories, authors most often emphasized expertise as important for "agency-produced science" (Sallenave & Cowley, 2006, p. 203) and "conservation initiatives" (Cook, Mascia, Schwartz, Possingham, & Fuller, 2013, p. 669). Conservation biologists' integrity and care for natural resources and society were discussed less frequently. Additionally, when authors discussed trust, the term was usually paired with credibility. Authors noted that "trust and credibility are identified as driving informant views of resource protection policy"

(Giampaoli & Bliss, 2011, p. 110) and "mutual trust and credibility" (Rudd, Beazley, Cooke, Fleishman, Lane, Mascia, 2011, p. 476) impact collaborative efforts among diverse stakeholders.

3.2 Credibility, Trust, and Risk

When authors discussed the role of credibility and trust in enhancing or detracting from scientific legitimacy, statements describing risks focused on concern about loss of biodiversity. Conservation scientists expressed concern that their expertise (credibility) did not "affect policy on natural resource conservation or management" (Sallenave & Cowley, 2006, p. 203) to minimize threats to biodiversity. Risk to biodiversity could occur because expertise (credibility) was used by various stakeholders in such ways as to create loss of trust. One author commented on the complex interaction among credibility, trust, and biodiversity conservation efforts: "Effective conservation of aquatic resources can be undermined by distrust and disagreement between resource users, scientists, agencies, and even among academicians, leading to an atmosphere of 'combat biology'" (Sallenave & Cowley, 2006, p. 203).

4. DISCUSSION

We found similarities in conservation literature's treatment of credibility and trust. First, the literature we reviewed provides no clear definition of credibility or trust. Second, both are typically treated as static entities rather than social constructs that depend on social relationships. Often, the literature failed to recognize that people comprehend the world from within their own sense of self. Pre-existing values and beliefs give meaning to new experiences, which then modify those values and beliefs. This iterative process leads to expectations that humans use to evaluate messages, policies, or actions and that influence credibility and trust in any sociopolitical context. Recognizing that one, credibility develops along the dimensions of expertise, goodwill, and trustworthiness and two, that trust involves mutual vulnerability can aid conservation scientists to make fitting choices when striving to enhance trust. Often scientists' credibility is the precursor to establishing trust and emphasizing appropriate combinations of these dimensions in response to situational demands would potentially allow for increased scientific legitimacy.

5. CONCLUSION

Our initial critical review of conservation science literature provides a basis for examining how the professional literature defines trust, explains its emergence, and acknowledges benefits and risks associated with trust. To advance these preliminary findings, we will identify additional key terms for a comprehensive search of publications that discuss the interactions of trust and credibility in the field of conservation biology. Second, we will expand our exploration of how trust and credibility interact to enhance or detract from scientific legitimacy. Finally, based on our final findings, we will offer suggestions for how conservation scientists could better negotiate trust and credibility when contributing scientific information to decisions regarding natural resource management.

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